Meteorological Abst.
Vol. 5 No. 1
Jan. 1954
Part 1
Structure and Physics
of the Atmosphere

5.1-123

Berliand, M. E. and Dobryshman, E. M., Soveshchanie po voprosam issledovaniia 'tranformatsii vozdukha. [Conference on the question of investigating the transformation of air.] Meteorologiia i Gidrologiia, No. 8:49-50, Aug. 1952. DLC—Review of meetings held by the Central Geophysical Observatory in cooperation with the Central Aerological Observatory, Central Institute of Weather Forecasting and Geophysical Observatories of Tashkent, Kiev and Minsk. The adiabatic air transformation (report by S. S. Gaigerov), heat transformation of cold air masses (by M. V. Zavarina), heat transformation of air masses (by M. E. Berliand) and actinometric investigations of free atmosphere (by V. G. Kastrov and E. A. Lopukhina) were discussed. Special reports on air transformation over the irrigated regions were made by P. A. Voronstov (aerological problem) and M. I. Iudin (change of climate). Subject Headings: 1. Air masses 2. Energy transformation 3. Conferences.—N.T.Z.

551.511:551.513.6

VORONTSOV, P.A.

Characteristics of local winds in the vicinity of the Mount Elbrus.
Trudy GGO no.32:47-62   '52.   (MIRA 11:1)
                    (Elbrus, Mount—Winds)

VORENTSOU P.A.

VORONTSOV, P.A.

Accuracy of the balanced pilot balloon method. Trudy GGO
no.32:69-80 '52.   (MIRA 11:1)
          (Balloons, Pilot)
          (Meteorology--Observations)

VORONTSOV, P.A.

Aerological conditions during the dry periods of the summer of
1951 in Kamennaya Step'. Trudy GGO no.36:105-126 '52. (MIRA 11:1)
(Talovaya District--Meteorology)

VORONTSOV, P.A.

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr 1954)

Name	Title of Work	Nominated by
Budyko, M.I. Laykhtman, D.L. Yudin, M.A. Kucherov, N.V. Berlyand, M.Ye. Krasikov, P.N. Timofeyev, M.P. Gayevskiy, V.L. Vorontsov, P.A.	"Physical Rules of the Microclimate of Agricultural Fields, Its Forecasting and Regulation" (series of articles)	Main Geophysics Observatory imeni A.I. Voyeykov

SO: W-30604, 7 July 1954

VORONTSOV, P. A.

"Some Data on the Conditions for the Formation of Hoarfrost (izroroz') in Mountainous Regions," Meteorol. i gidrologiya, No 8, 1953, pp 29-30

According to observations on El'brus in the summer of 1940 for a wind of 5-6m/sec it seems that if a cloud or fog consists of supercooled drops less than 7-8 microns in radius the formation of hoarfrost must be expected. For sizes of drops 7-15 microns the formation of snow-like hoarfrost is observed; for sizes 15 microns and larger the hoarfrost is in the form of glazed frost (gololed). (RZhGeol, No 5, 1954)

SO: Sum No. 568, 6 Jul 55

VORONTSOV. P. A.

"Aerological Studies of the Structure of Air Flow Over a Cotton Field and Over a Semidesert"
Tr. Gl. Geofiz. Observ., No 38, 1953, pp 104-132

Results of experimental measurements of the structure of the air flow over the oasis Pakhta-Aral and over the semidesert ("Hunger Steppe") carried out during the summer of 1952 are outlined. Special equipment, such as captive balloons, accelerographs and meteorographs on aircraft, were used to register the horizontal and vertical components of the wind. Turbulence characteristics, amplitude and pulsation of wind velocity, hurricanes in their behavior were obtained. (RZhFiz, No 2, 1955)

SO: Sum. 402, 12 May 55

VORONTSOV, P. A. and KAZAKOV, L. A.

"Peculiarities in the Wind Cycle Over a Cotton Field and a Semidesert,"
Tr. Gl. geofiz. observ., No 39, 1953, pp 133-142

Results of expeditional studies of aerial currents in the lower atmos-
phere over a cotton field and a semidesert, around 20-25 km apart, are
described. Direction and velocity of wind were measured either by a pilot
balloon or by an aerostatic meteorograph.

RZhFiz, No 3, 1955

VORONTSOV, P. A.

"Investigation of the Influence of Forest Belts Upon Wind by Means of Equipoised
    Balloons".
Trudy Gl. geofiz. observ., No 44, pp 91-103, 1954.

    Methods of studying the wind field close to forest belt by way of
basis observations on equipoised balanced pilot-ballons is described. By
means of them during observations in the Nansen sovkhoz, in Kamennaya Step',
and in Pakhta-Aral, it was possible to clarify the distribution of horizontal
and vertical component velocities, and also the presence and even dimen-
sions of atmospheric vortexes. Observations were made most frequently of
all on weak winds. (RZhGeol, No 8, 1955)

SO: Sum No 884, 9 Apr 1956

VORONTSOV, P.A.

"Investigation of the Influence of Balanced Spheres."

SO: Problems of Agricultur-l and Forst Climatology." No 44(106), 1954, page 91.

VORONTSOV, P. A.

"Certain Problems of Instrumental Observations on the Bumpiness of Airplanes".
Trudy Gl. Geofiz. Observ., No 47, pp 28-39, 1954.

Procedure for handling of tapes from accelerographs is given, and
certain characteristics of the atmosphere's state which are obtained by
these readings are discussed. Use is made of the data of expeditions of
the Main Geophusical Observatory in Kamennaya Step' in 1951 and in Pakhta-
Aral in 1952. The accelerograph as receiver had a load suspended on springs
and joined by a system of levels with indicator. A correlation was obtained
between accelerograph readings and the roughness of the under-lying surface
(steppe, forest, etc.). The coefficients of turbulence were obtained from the
data of the accelerograph. (RZhGeol, No. 11, 1955)

SO: Sum No 884, 9 Apr 1956

VORONTSOV, P. A.

"The Transformation of Air Over a Limited Water Surface in Wintertime"
Tr. Gl. Geofiz. Observ., No 47, 1954, pp 63-70

Characteristics of aerial masses 300 to 500 meters high were analyzed.
Records from a meteorograph showed a dependence of the altitude of the
inversion layer on the air temperature at a 2 meters height, and on the
behavior of the vertical temperature gradient over water or land.
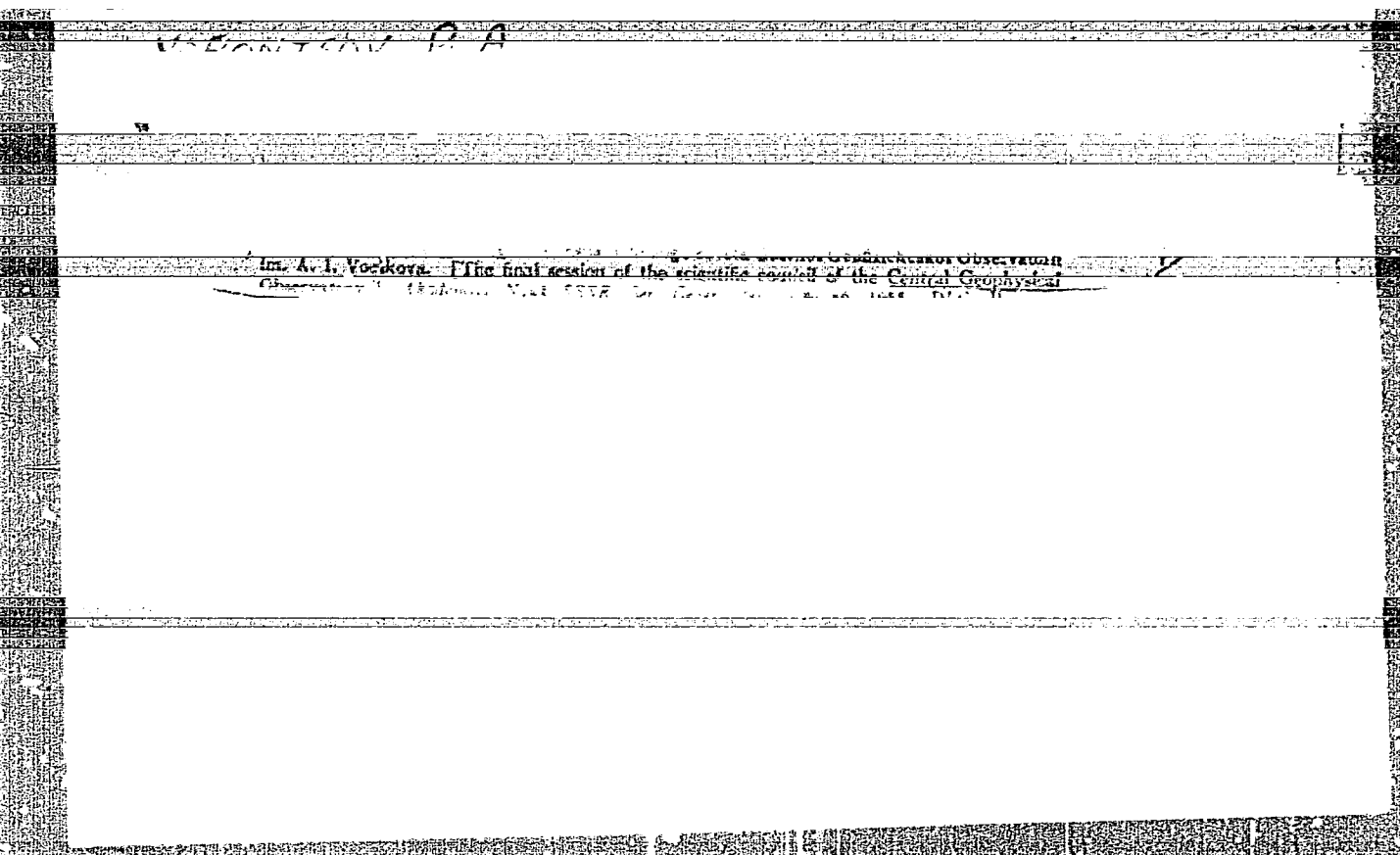(RZhFiz, No 2, 1955)

SO: Sum. 492, 12 May 55

VORONTSOV, P. A.; Pinegin, G. N.

"Concerning the Cloud Gauge OP-3"
Trudy Gl. Geofiz. Observ., No 47, 1954, 86-93

The results of tests of the cloud gauge OP-3. The instruments is con-
venient in handling, simple, and stable; its principle of action is based
on the variation in the resistance of a sensitive element due to humidity
of the surrounding medium. Variation in resistance induces a change in
the tone of the sound signal received by a receiver. The moment of change
of tone of the signal corresponds to the moment of entering and leaving
the cloud. The results of investigations showed that the cloud gauge gives
a tone change in regions where there is no visible cloudiness, but where
there is a small quantity of fluid drops invisible to the eye. During
icing of the instrument it also gives a tone change independently of
change in mositure content in the medium. This instrument cannot be rec-
ommended as a network instrument because of its errors in cloud thickness.
(RZhGeol, No 9 ,1955)

SO: Sum-NB 845, 7 Mar 56

VORONTSOV P A

Ins. Av. I. Voeikova : [The final session of the scientific council of the Central Geophysical Observatory] (Leningrad. Trudy SSSR ...)

ARKHIPOVA, Ye.P.;VORONTSOV, P.A.;OLEBOVA, M.Ya.; GOLUBOVA, T.A.; ROMANOVA,Ye.N.

Outline of the operational area and observation methods of the 1953
general hydrometeorological expedition in a drained swamp. Trudy GGO
no.49:5-10 '55.   (MLRA 9:1)

(Meteorology, Agricultural) (Reclamation of land) (Swamps)

VORONTSOV, P.A.

Investigation of air current directions and necturnal radiation
inversion in sections having varying degrees of drainage. Trudy
GGO no.49:68-84 '55.   (MLRA 9:1)
    (Atmoshere) (Solar radiation) (Reclamation of land)

VORONTSOV, P.A.;   SELITSKAYA, V.I.

Sounding balloon methods for investigating the atmosphere. Trudy
GGO no.51:3-16 '55.   (MLRA 9:8)
                    (Balloons, Sounding)
                    (Meteorological instruments)

VORONTSOV, P.A.

Using balanced pilot balloons and slow-ascent-rate balloons. Trudy
GGO no.51:17-25 '55.   (MLRA 9:8)

(Balloons, Sounding)

VORONTSOV, P.A.

Methods of recording horizontal and vertical pulsations of wind
velocity by means of captive balloon. Trudy GGO no.51:26-49 '55.

(MLRA 9:8)

(Winds) (Meteorological instruments)

VORONTSOV, P. A.   DUBOV, A.S.

Methods of investigating the structure of air currents from and
airplane.   Trudy GGO no.51:50-65 '55.   (MLRA 9:8)
            (Atmosphere) (Aeronautics in meteorology)

VORONTSOV, P.A.

Using the P.A.Molchanov radiosonde for recording levels of possible
icing. Trudy GGO no.51:66-71 '55.   (MLRA 9:8)
              (Radiosondes) (Clouds)

VORONTSOV, P.A.

Convection currents in the lowest atmospheric layer. Trudy GGO
no.54:3-23 '55.   (MLRA 9:8)
              (Atmosphere) (Heat--Convection)

VORONTSOV, P.A.

Vertical gustiness in the atmosphere on the basis of airplane
observations. Trudy GGO no.54:44-58 '55.   (MLRA 9:8)
          (Atmospheric turbulence)

VORONTSOV, P.A.

Breezes of the TSimlyansk Reservoir. Trudy GGO no.54:81-95 '55.

(MLRA 9:8)

(TSimlyansk Reservoir--Winds)

VORONTSOV, P.A.

   Some problems in local air currents.   Trudy GGO no.54:59-77 '55.

                                                    (MLRA 9:8)
            (Atmosphere)

VORONTSOV, P.A.

Vertical air movements in summer in the Tsimlyansk Reservoir region.
Trudy GGO no.56:19-35 '56.   (MIRA 15:6)
          (Tsimlyansk Reservoir region--Winds)

VORONTSOV, P.A.

Profiles of main meteorological elements in atmospheric bonndry
layers. Trudy GGO no.63:55-76 '56.   (MLRA 10:5)
                        (Atmosphere)

VORONTSOV, P.A.

Aerological studies of ground inversions. Trudy GGO no.63:77-102
'56.   (MLRA no.10:5)
                        (Atmospheric temperature)

VORONTSOV, P.A.

Relation of the structure of air currents to atmospheric conditions.
Trudy GGO no.63:103-121 '56.   (MLRA 10:5)
                              (Atmosphere)

VORONTSOV, P. A.

"Some Peculiarities of the Temperature - and Wind-Codnitions Above the Lake Sevan,"

paper presented at The Scientific Session of Tbilisi Scientific Research Institute for Hydrometeorology, May 1957.

Meteorologiya i Gidrologiya, 1958, Nr 1, pp. 66-67.

VORONTSOV, P.A.

3(7)   PHASE I BOOK EXPLOITATION   SOV/1880

Leningrad. Glavnaya geofizicheskaya observatoriya

Mikroklimat severnoy chasti Kazakhskogo melkosopochnika (Microclimate
    of the Northern Part of the Kazakh Hummocky Region) Leningrad,
    Gidrometeoizdat, 1958. 207 p. Errata slip inserted. 800 copies
    printed.

Sponsoring Agency: Glavnoye upravleniye gidrometeorologicheskoy sluzhby
    pri Sovete Ministrov SSSR.

Ed. (Title page): I.A. Gol'tsberg, Doctor of Geographical Sciences;
    Ed. (Inside book): V.D. Pisarevskaya; Tech. Ed.: N.V. Volkov,

PURPOSE: This book is intended for meteorologists, agronomists, workers
    on collective farms, and the interested layman.

COVERAGE: This book provides a climatic description of the Kazakh
    "Melkosopochnik" (hummocky region). It lists the results of studies

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made on the microclimate of the region.   Individual chapters deal
with the physical phenomena underlying and shaping the microclimatic
features, and the effect the latter have upon the region's agri-
culture. The work was prepared by members of the GGO and the
KazNIGMI. A map on the recurrence of drought was drawn up by
Doctor of Agricultural Sciences A.M. Alpat'yev and scientific worker
A.I. Trofimova of the Vsesoyuznyy institut rasteniyevodstva.   Ye.I.
Kuznetsova worked on data dealing with the temperature of the active
 slopes of Li Pkhil' En and the changes in prevailing air currents
brought about under the influence of relief. The chart showing
the amount of precipitation during the warm period of the year was
drawn up by L.P. Kuznetsova under the direction of Doctor of Geo-
grahpical Sciences O.A. Drozdov (GGO). There are 89 references of
which 81 are Soviet, 6 German, 1 French, and 1 English.

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Microclimate of the Northern Part (Cont.)   SOV/1880

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Microclimate of the Northern Part (Cont.)   SOV/1880

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VORONTSOV, P.A.

Aerological studies of evaporation fog from the Angara River.
Trudy GGO no.73:24-36 '58.   (MIRA 11:9)
                    (Irkutsk region--Fog)

VORONTSOV, P.A.

Aerological study of the boundary layer of the atmosphere over a hilly region of virgin soil. Trudy GGO no.73:61-86 '58.

(MIRA 11:9)

(Atmosphere)

VORONTSOV, P.A.

Breezes over Lake Ladoga. Trudy GGO no.73:87-106 '58.   (MIRA 11:9)
(Ladoga, Lake--Winds)

VORONTSOV, P.A.; MIKHEL', V.M.; ERLER, A.A.

Utilizing model airplanes guided by radio for aerological studies of
the lower layers of the atmosphere. Trudy GGO no.73:107-115 '58.
                                                    (MIRA 11:9)
        (Atmosphere) (Airplanes--Models--Radio control)

VORONTSOV, P.A.

3(7) $\text{Mp}2\text{M}$ 🖉   PHASE I BOOK EXPLOITATION   SOV/1734

Leningrad. Glavnaya geofizicheskaya observatoriya

Issledovaniye protsessov teplo- i vlagoobmena nad vodoyemami (Research in the Processes of Heat and Moisture Exchange Over Water Reservoirs) Leningrad, Gidrometeoizdat, 1958. 130 p. (Series: Its: Trudy, vyp. 78) 1,375 copies printed.

Sponsoring Agency: USSR. Glavnoye upravleniye gidrometeorologicheskoy sluzhby

Ed. (title page): M.F. Timofeyev, Candidate of Physical and Mathematical Sciences; Ed. (inside book): Yu.V. Vlasova; Tech. Ed.: N.V. Volkov.

PURPOSE: This publication is intended for scientific and technical personnel working in meteorology, hydrology, hydrotechnology and related fields.

COVERAGE: This collection of articles, by several authors, reports the results of experimental work carried on in 1956 in investigating the meteorological conditions over water reservoirs. It contains the results and an examination of

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Research in the Processes   (Cont.)   SOV/1734

the meteorological and aerological investigation conducted at Lake Sevan under
field conditions during the summer of 1956. Two articles are devoted to meteoro-
logical conditions prevailing over Lake Balkhash. No personalities are mentioned.
The articles are accompanied by tables, diagrams, and bibliographic references.

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VORON TSOV, P.A.

3(4,7)

Vsesoyuznyy gidrologicheskiy s"yezd, 3rd, Leningrad, 1957.

Trudy... III. Sektsiya gidrofiziki (Transactions of the 3rd All-Union Hydrological Conference; 3: Hydrophysics Section) Leningrad, Gidrometeoizdat, 1959. 470 p. Errata slip inserted. 2,000 copies printed.

Sponsoring Agency: Glavnoye upravleniye gidrometeorologicheskoy sluzhby pri Sovete Ministrov SSSR.

Resp. Ed.: V.A. Uryvayev; Ed.: V.S. Protopopov; Tech. Ed.: M.I. Bravina.

PURPOSE: This work is intended for meteorologists, hydrologists, and hydrophysicists, particularly those engaged in the study of snow and ice and evaporation processes.

COVERAGE: This book contains papers on hydrophysics which were presented and discussed at the Third All-Union Hydrological Conference in Leningrad, October 1957. The Conference published 10 volumes on various aspects of hydrology of which this is number 3. The editorial board in charge of the series include: V.A. Uryvayev (Chairman), O.A. Alekin, Ye.V. Bliznyak (deceased), O.M. Borsuk, M.A. Velikanov, L.K. Davydov, A.P. Domanitskiy, G.P. Kalinin, S.M. Kritskiy, B.I. Kudelin, L.F. Manoim, M.F. Menkel', B.F. Orlov, I.V. Popov, A.K. Proskuryakov, D.L. Sokolovskiy, O.A. Spengler, A.I. Chebotarev, and S.K. Cherkavskiy. This volume is divided into 2 sections: the first contains reports from the subsection for the study of evaporation processes, and the second contains reports from the snow and ice subsection. References accompany each article.

Krilova, T.Y. [Candidate of Physical and Mathematical Sciences, 000 Leningrad] Radiation Balance of Water Bodies 42

Vorontsov, P.A. [Candidate of Geographical Sciences, 000 Leningrad] Certain Characteristics of Meteorological Conditions Over Water Surfaces 59

Ykoleva, M.I. [Junior Scientific Worker, 000 Leningrad] The Effect of Water Surfaces on the Air Transformation 59

Deitcityev, N.G. [Candidate of Geographical Sciences, ?, Moscow] Infiltration Into Deep Beds in Relation to the Determination of Evaporation 64

Konstantinov, A.P. and V.P. Rubkova, [Candidates of Physical and Mathematic Sciences, 000 Leningrad] Basic Trends in the Study of Evaporation From a Ground Surface 72

Volobuyev, V.L. [Corresponding Member of the Azerbaydzhan Academy of Sciences, Doctor of Agricultural Sciences] Relation Between Soils and the Hydrological Conditions 84

Romanov, V.V. [Candidate of Technical Sciences, 000 Leningrad] Determining Evaporation by the Heat Balance Method Using the Data of Standard Meteorological Observations 92

Rutin, N.P. [Candidate of Geographical Sciences, 000 Leningrad] The Gradient Method for Determining Evaporation From the Ground and Its Application Within the Station Network 95

Konstantinov, A.R. [Candidate of Physical and Mathematical Sciences, VNIGL OOI Valday] Computing Evaporation From the Ground According to Data Supplied by Meteorological Stations 103

Struzer, L.R. [Candidate of Physical and Mathematical Sciences, OOI Leningrad] Estimating the Error in the Existing Methods For Determining Evaporation From the Ground 110

Biryukov, N.D. [Candidate of Geological and Mineralogical Sciences, Institute of Forestry, Leningrad] Computing Total Evaporation of the Taiga Zone as Exemplified by the Forest Range of the Kadnokovskoye Forest District in the Vologodskaya Oblast' 118/A

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SOV/5⌐-59-10-22/25

AUTHOR: Vorontsov, P. A.

TITLE: At the Main Geophysical Observatory

PERIODICAL: Meteorologiya i gidrologiya, 1959, Nr 10, p 56 (USSR)

ABSTRACT: On June 19, 1959 the Uchenyy sovet (Scientific Council) of the Glavnaya geofizichcskaya observatoriya im. A. I. Voyeykova (Main Geophysical Observatory imeni A. I. Voyeykov) held a meeting on the occasion of the 40th anniversary of the death of Academician Mikhail Aleksandrovich Rykachev. M. V. Zavarina spoke about "Life and Work of M. A. Rykachev". Lectures were also delivered by D. F. Nezdyurov, who assisted Rykachev at the Observatory, and by Aleksandra Mikhaylovna, the daughter of the scientist.

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VORONTSOV, P.A.

Aerological characteristics of sea fogs. Trudy AANII 228:
38-54 '59.   (MIRA 13:2)
        (Arctic Ocean--Fog)

VORONTSOV, P.A.; SELITSKAYA, V.I.

Vertical structure of summer fogs in the region of Dikson
Island. Trudy AANII 228:87-99 '59.   (MIRA 13:2)
        (Dickson Island--Fog)

VORONTSOV, P. A., Doc Geog Sci -- (diss) "Aerological research into
boundary layer of the atmosphere." Leningrad, 1960. 39 pp; (Lenin-
grad Order of Lenin State Univ im A. A. Zhdanov); 200 copies; price
not given; list of author's works on pp 37-39 (50 entries); (KL, 27-60,
150)

VOROBYOV, P.A.; MESHCHERSKAYA, A.V.; SELEZNEVA, Ye.S.; CHESTNAYA, I.I.;
   AYNBUND, M.M.; KIRILLOVA, T.V.; MESINA, L.V.; OGNEVA, T.A.;
   SEROVA, N.V.; TIMOFEYEV, M.P., kand.fiz.-mat.nauk; ZHDANOVA, L.P.,
   red.; BRAYNINA, M.I., tekhn.red.

[Meteorological regime of Lake Sevan] Meteorologicheskii rezhim
ozera Sevan. Pod red. M.P.Timofeeva. Leningrad, Gidrometeor.
izd-vo, 1960. 310 p.   (MIRA 14:3)

1. Leningrad. Glavnaya geofizicheskaya observatoriya.
        (Sevan Lake region--Meteorology)

PHASE I BOOK EXPLOITATION   307/153

Vorontsov, Petr Alekseyevich

Aerologicheskiye issledovaniya pogranichnogo sloya atmosfery (Aerological
    Studies of the Boundary Layer of the Atmosphere). Leningrad,
    Gidrometeoizdat, 1960. 450 p. 1,250 copies printed.

Sponsoring Agencies: Leningrad. Glavnaya geofizicheskaya observatoriya;
    and USSR. Glavnoye upravleniye gidrometeorologicheskoy sluzhby.

Resp. Ed.: Ye. S. Selezneva; Ed.: M. M. Yasnogorodskaya; Tech. Ed.:
    M. I. Braynina.

PURPOSE: This book is intended for meteorologists and scientists working
    on problems of atmospheric physics.

COVERAGE: The author discusses the structure of the boundary layer of
    the troposphere, i.e. the layer between 20-500 meters above ground.
    The characteristics of temperature, wind, and humidity fields for
    several regions in the USSR, based on data obtained in aerological
    studies made by the GGO (Main Geophysical Observatory), are described.
    An analysis is given of the conditions of thermal and wind regimes
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Aerological Studies (Cont.)   SOV/4053

and humidity. Results obtained in studies of turbulence, vertical currents, the transformation of air masses, and aerological conditions in fogs are given. Data on the structure of local winds are given. The book contains 335 references: 237 Soviet, 58 German, 31 English, 6 French, 2 Japanese, and 1 Bulgarian.

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PHASE I BOOK EXPLOITATION   SOV/5860

Vorontsov, Petr Alekseyevich

Metody aerologicheskikh issledovaniy pogranichnogo sloya atmosfery.
    (Aerological Methods of Investigating the Atmospheric Boundary Layer)
    Leningrad, Gidrometeoizdat, 1961. 221 p. 1500 copies printed.

Sponsoring Agency: Glavnoye upravleniye gidrometeorologicheskoy sluzhby pri
    Sovete Ministrov SSSR. Glavnaya geofizicheskaya observatoriya
    im. A. I. Voyeykova.

Resp. Ed.: M. S. Sternzat; Ed.: M. M. Yasnogorodskaya; Tech. Ed.:
    M. I. Braynina.

PURPOSE: This book is intended for meteorologists and other readers concerned
    with problems of physics of the atmosphere.

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Aerological Methods of Investigating (Cont.)   SOV/5860

COVERAGE: The book describes the methods and apparatus used in aerological
    investigations of the atmospheric boundary layer, temperature and humid-
    ity of the air, atmospheric pressure, wind conditions, turbulence, and
    vertical air flows. In his investigations of the boundary layer, the
    author tested almost all the methods and instruments considered in the
    book and made use of the available literature regarding this problem.
    Methods of sounding with the aid of aircraft, helicopters, captive bal-
    loons, kites, and other lifting devices are discussed. Some special fea-
    tures of meteorological-balloon observations, particularly the method of
    adjusted pilot balloons, are considered. Wherever it was possible, errors
    in method and in the accuracy of measurements are pointed out. Several
    special features of the climatological treatment of the observation data
    are briefly outlined. Many personalities are mentioned in the text.
    There are 107 references: 78 Soviet, 21 English, 6 German, 1 French, and
    1 Japanese.

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40236

S/169/62/000/007/096/149

D228/D307

3,5110

AUTHORS: Vorontsov, P. A. and Kirillova, T. V.

TITLE: Relation of the radiation balance to the boundary layer stratification

TEXT: The relation between the radiant energy balance in the atmosphere's lower layer and the vertical temperature profile is investigated. The results of measurements of the radiation balance and the temperature gradient on clear, cloudy, and overcast days are used for this purpose. It was established that the ratio for the long-wave radiation balance (B_1) to the radiation of the underlying surface (σT_n^4), which is considered as a black body when the surface temperature is T_n, is related to the temperature gradient γ in the layer 0 - 100 m. In equilibrium conditions $B_1/\sigma T_n^4 \approx 0.2$.

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Relation of the ...

S/169/62/000/007/096/149
D228/D307

In case of inversions $\Delta B_1/\Delta \gamma = 0.01$; in the event of superadiabatic gradients this ratio equals 0.05 cal/cm^2.min.deg. For conditions of continuous cloud B_1 does not depend on γ. Analogous relations were obtained, too, for the ratio of long-wave atmospheric radiation (E_a) to σT^4 (T being the air temperature). $\boxed{\text{Abstracter's note:}}$ Complete translation. $\boxed{}$

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S/169/62/000/001/062/083
D228/D302

3.5000

AUTHOR: Vorontsov, P. A.

TITLE: The question of compiling the boundary layer's aero-
            climatic characteristics

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 1, 1962, 68, ab-
            stract 1B430 (Tr. N.-i. in-ta aeroklimatol., no. 14,
            1961, 150-152)

TEXT: The main problems confronting aeroclimatology in connexion
with the study of the troposphere's boundary layer with an average
height of 1.5 - 2 km are considered. Up to the present this layer
remains almost unexamined in published climatologic data. This is
mainly because the data of network aerologic observations (of ra-
dio- and aircraft-sounding) for the atmosphere's lower layers con-
tain many errors -- the result of the imperfection of research me-
thods (in particular, the high inertia of the temperature recei-
vers and the humidity during their ascent at great speeds). This
deficiency can be partly rectified by introducing corrections for

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The question of compiling ...

S/169/62/000/001/062/083
D228/D302

the inertia of these receivers. At the same time it is necessary
to develop new methods of investigating the boundary layer -- for
example, by radio-sounding apparatus -- and to expand the number
of measurable elements. It is pointed out that a number of the
boundary layer's quantitative characteristics may possibly be ob-
tained on the basis of the already available data of terrestrial
meteorologic observations and from certain parameters of the free
atmosphere. In the first place this applies to determining the
boundary layer's height H_b and the coefficient of turbulent ex-
change $\bar{K}$ from the formulas proposed by D. L. Laykhtman. The author
mentions his own methods of processing the results of balloon sound-
ings with allowance for the criterion of thermodynamic stability
and also the standard schemes, suggested by Shneyder-Karius, for
constructing the boundary layer under different weather conditions.
/¯Abstractor's note: Complete translation._7

Card 2/2

KONSTANTINOV, A.R.; VORONTSOV, P.A.

Effect of forest belts on winds and turbulent exchange in the atmosphere. Trudy UkrNIGMI no.26:99-110 '61.

(MIRA 15:2)

(Forest influences)
(Winds)

VORONTSOV, P.A.

Conditions promoting the conversion of low clouds into fog
and the conversion of fog into low clouds. Trudy GGO no.106:
10-18 '61.   (MIRA 14:10)

(Cloud physics)

CHESTNAYA, I.I.; VORONTSOV, P.A.

Distribution of clouds in the basin of Lake Sevan.   Trudy GGO
no.106:50-54 '61.   (MIRA 14:10)
              (Sevan Lake region--Clouds)

VORONTSOV, P.A.

Local winds over Lake Sevan.   Trudy GGO no.106:55-61
'61.   (MIRA 14:10)
        (Sevan Lake region—Winds)

VORONTSOV, P.A.; OGNEVA, T.A.; SEROVA, N.V.

Formation of the temperature regime of soil and air. Trudy GGO
no.107:21-33 '61.   (MIRA 14:10)
     (Soil temperature)   (Atmospheric temperature)

VORONTSOV, P.A.

Structural characteristics of the atmospheric boundary layer
over the village of Makhtaly in September 1959. Trudy GGO
no.107:116-127 '61.   (MIRA 14:10)
                        (Meteorology)

VORONTSOV, P.A.

        Structure of the air stream in the lower layer of the atmosphere
        0.5 km. above the village of Voyeykovo. Trudy GGO no.135:3-25
        '62.   (MIRA 15:8)
              (Voyeykovo region (Leningrad Province)--Winds)

VASIL'CHENKO, I.V.; VORONTSOV, P.A.; DOVGALYUK, Yu.S.; MASLOV, S.I.

Methodology and apparatus for studying the boundary layer of the
atmosphere from ships. Trudy GGO no.135:120-128 '62.

(MIRA 15:8)

(Atmosphere) (Meteorological instruments)

VORONTSOV, P.A.; GERMAN, M.A.

Methods for the investigation of the turbulence regime of a
boundary layer based on accelerograph recording data in Fakhta-
Aral. Trudy GGO no.154:65-77 '64.   (MIRA 17:7)

VORONTSOV, P.A.

Structure of the lowest layer of the atmosphere (0-0.5km)
during the period of the Dnieper Expedition. Trudy GGO no.144:
102-110 '63.   (MIRA 17:6)

ACCESSION NR: AT4033572   S/2922/63/009/000/0284/0286

AUTHOR: Vasil'chenko, I. V.; Vorontsov, P. A.; Dovgalyuk, Yu. S.; Maslov, S. I.

TITLE: Problems in the method of studying the lower layer of the atmosphere from ships

SOURCE: Vsesoyuznoye nauchnoye meteorologicheskoye soveshchaniye. 1st, Leningrad, 1961. Pribory* i metody* nablyudeniy (Instruments and methods of observation); trudy* soveshchaniya, v. 9. Leningrad, Gidrometeoizdat, 1963, 284-286

TOPIC TAGS: meteorology, aerology; atmospheric boundary layer, meteorological instrument, meteorological observation

ABSTRACT: The problems of making systematic observations of the structure of the boundary layer of the atmosphere over the ocean surface are discussed. The Glavnaya geofizicheskaya observatoriya (Main Geophysical Observatory) made such studies in the summer of 1960 by balloon and helicopter ascents from two research vessels in the Atlantic. The difficulties involved in using helicopters are described; the helicopter took off from an 8 X 8 m pad on the prow of an 8,000-ton vessel. The standard KA-15 helicopter was equipped with the helicopter electro-meteorograph developed by the Tsentral'naya aerologicheskaya observatoriya

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ACCESSION NR: AT4033572

(Central Aerological Observatory); a meteorograph with mechanical recording was carried for comparative purposes. Temperature, pressure, temperature fluctuations and humidity were recorded. Fifty such flights indicated that the Central Aerological Observatory instrument is satisfactory and easy to use. The vessel has a distorting influence on the measurements of air temperature and humidity; a special helicopter flight program is described which eliminates these distortions. A MAZ-1 captive balloon was used in observations from a 1,200-ton vessel. The balloon meteorograph developed by the Main Geophysical Observatory was suspended to the cable of the helium-filled envelope. The balloon-launching method is essentially the same as used on land; the balloon was permitted to assume the following levels: 25, 50, 100, 150, 200, 300, 400, 500 and 700 meters, being held at each level for 3 to 5 minutes. Problems involved in the use of meteorological balloons aboard ships are discussed briefly.

ASSOCIATION: Glavnaya geofizicheskaya observatoriya (Main Geophysical Observatory)

SUBMITTED: 00   DATE ACQ: 16Apr64   ENCL: 00

SUB CODE: ES   NO REF SOV: 003   OTHER: 000

Card   2/2

ACCESSION NR: AT4030531   S/0000/63/000/000/0092/0095

AUTHOR: Vorontsov, P. A.

TITLE: An experiment utilizing helicopters for sounding the lower level of the atmosphere (1.5 to 2.0 km)

SOURCE: Nauchnaya konferentsiya po aviatsionnoy meteorologii. Moscow, 1960. Materialy*, Moscow, Gidrometeoizdat, 1963, 92-95

TOPIC TAGS: helicopter, sounding, lower layer, synoptics, weather element, MI-1 helicopter, KA-15 helicopter

ABSTRACT: This paper is one of 13 previously unpublished reports of the 40 papers given at the Nauchnaya konferentsiya po voprosam aviatsionnoy meteorologii (scientific conference on problems of aviation meteorology) that was held in June and July of 1960 in Moscow at the Glavnoye upravleniye gidrometeorologicheskoy sluzhby* SSSR. In this article the author examines the application of helicopters for taking soundings of the atmosphere at altitudes of 1.5-2 km. The helicopters most suitable for investigating the boundary layer are the MI-1 and the KA-15. The placing of the meteorograph on the MI-1 in front of the fuselage at approximately the distance of 0.5 of the radius of the main rotor from its center was found to be most advantageous.

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ACCESSION NR: AT4030531

A description of the instrument is given. Photographs of the installation on the MI-1 and the KA-15 are shown. The electro-meteorograph, developed at the Tsentral'-naya aerologicheskay observatoriya (Central Aerological Observatory) and registered atmospheric pressure with a maximum error of ± 3.0 mb, mean air temperature at maximum error $\pm 0.5^\circ$ and inertia of 0.5 sec; temperature pulsations were measured within a range of $\pm 3.0^\circ$ having a maximum error of $\pm 0.2^\circ$ and a coefficient of inertia of 0.2 sec. Maximum error in measuring humidity, within the range of 25-100%, was no more than $\pm 7\%$ within the entire temperature range, and the coefficient of inertia did not exceed 30 sec. Orig. art. has: 2 figures.

ASSOCIATION: none

SUBMITTED: 18Feb63   DATE ACQ: 17Apr64   ENCL: 00

SUB CODE: AS   NO REF SOV: 000   OTHER: 000

Card 2/2

ACCESSION NR: AT4043159   S/2531/64/000/154/0065/0077

AUTHOR: Vorontsov, P. A.(Doctor of geographic sciences); German, M. A.

TITLE: A method for investigating the turbulent regime of the boundary layer from accelerograph records at Pakhta-Aral

SOURCE: Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy*, no. 154. Voprosy* fiziki atmosfery* (Problems in atmospheric physics), 65-77

TOPIC TAGS: meteorology, atmospheric boundary layer, accelerograph, atmospheric turbulence

ABSTRACT: This article discusses a method for computing a number of characteristics of the structure of the air flow from aircraft accelerograph records. Computations were made with an electronic computer. The records of aircraft overloads were obtained largely during the Pakhta-Aral Expedition of the Glavnaya geofizicheskaya observatoriya (Main Geophysical Observatory) in 1952. The authors also determined the values of the coefficient of turbulent exchange more precisely. Only a sample of 12 cases out of 180 was used. Most flights were made on a PO-2 aircraft in the morning hours. The aircraft made horizontal flights at heights of 300, 500, 750 and 1,000 m above cotton fields, the

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ACCESSION NR: AT4043159.

steppe and desert. Aircraft overloads were recorded with a ZP-11 accelerograph. Data are given on computation of the turbulence coefficient for flights over these underlying surfaces. For convenience in further analysis the turbulence energy spectrum was represented in the in the form of a set of curves, as shown in Fig. 1, of the Enclosure. There is a spread of the curves of the energy spectrum which can be attributed to the difference in the intensity of turbulent energy during flights over the different surfaces. With a decrease in the size of turbulent eddies (with an increase in space frequency) all the curves have a tendency to decrease. The individual peaks on the curves reflect the influence of vertical currents causing an energy increase in the spectrum. With an increase in scale of the eddies the intensity of energy transfer from eddies of one scale to eddies of a larger scale increases somewhat with respect to the high-frequency part of the spectrum. This is associated with the thermal stability of the investigated layer. The method described for determination of the spectral density of turbulent energy can be used in various investigations of the free atmosphere. Orig. art. has: 20 formulas, 5 figures and 5 tables.

ASSOCIATION: Glavnaya geofizicheskaya observatoriya, Leningrad (Main Geophysical Observatory)

SUBMITTED: 00   ENCL: 01

SUB CODE: ES   NO REF SOV: 015   OTHER: 000
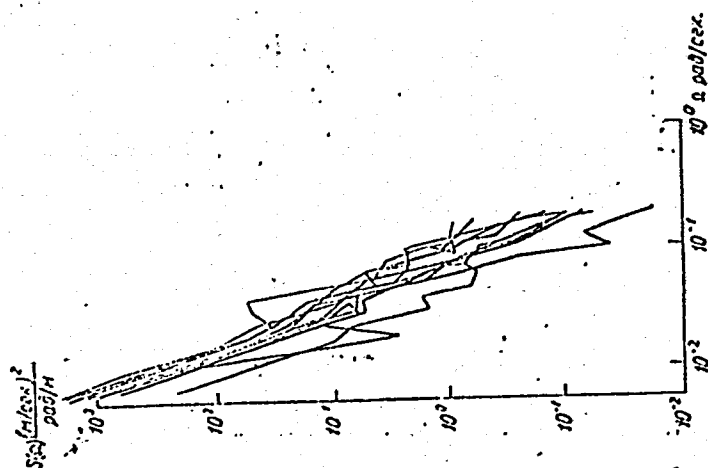
Card 2/3

Figure 1. Turbulence energy spectrum over different underlying surfaces. Ordinate =
$\frac{(m/sec.)^2}{rad./m}$; abscissa = rad./sec.

Card 3/3

VORONTSOV, P.A.

    Some aerological observation problems in studying the dispersion of
chimney plumes. Trudy GGO no.158:56-68 '64.   (MIRA 17:9)

VORONTSOV, P.A.; GERMAN, M.A.; DUBOV, A.S.

Methodology and some results of an airborne exploration of turbulet
exchange in the boundary layer of the atmosphere. Trudy GGO no.158:
77-83 '64.   (MIRA 17:9)

VORONTSOV, P.A.; GALADZHIY, N.M.; KONSTANTINOV, A.R.

Study of the distribution of some structural characteristics
of the air flow along the vertical. Trudy GGO no.144:88-95
'63.   (MIRA 17:6)

ACCESSION NR: AT4028749

S/2531/63/000/144/0102/0110

AUTHOR: Vorontsov, P. A.

TITLE: Structure of the lower layer of the atmosphere (0-0.5 km) during the Dnieper expedition

SOURCE: Leningrad. Gl. geofiz. observ. i Ukr. n.-i. gidrometeorol. inst. Trudy*, no. 144/40, 1963. Fizika pogranichnogo sloya atmosfery* (physics of the atmospheric boundary layer); Dneprovskaya expeditsiya GGO i UkrNIGMI, 102-110

TOPIC TAGS: surface layer, balloon sounding, temperature change, humidity change, wind velocity, turbulence, Dnieper expedition, inversion layer

ABSTRACT: In this paper, the author examines the structure of the lower layer of the atmosphere (0-0.5 km) according to data from sounding balloons. The daily changes of air temperature and air humidity, wind velocity and its pulsations, as well as the coefficient of turbulent exchange are presented. The data of the Dnieper expedition, broken down into daily and hourly readings of soundings in relative humidity and temperature gradients are given in a number of tables. .Also presented are tables of the daily and hourly changes in the horizontal component of wind velocity pulsation and the probability of turbulence. The average daily values of

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ACCESSION NR: AT4028749

the separate characteristics of air flow in the layer at 0.3 km are plotted in four
separate graphs. In general, all the presented characteristics of the lower layer
(0.5 km) during the activity of the expedition, point to a considerable daily
variability of the meteorological elements in the investigated layer, with great
instability during daylight hours and often a powerful radiation inversion at night.
The rise of turbulency by day causes a decrease in the vertical gradients of wind
velocity, potential temperature and specific humidity, and a weakening of turbulence
at night causes 'an increase of these factors. Orig. art. has: 2 figures and 9
tables.

ASSOCIATION: Leningradskaya glavna geofizicheskaya observatoriya (Principle
Geophysical Observatory of Leningrad)

SUBMITTED: 00   DATE ACQ: 16Apr64   ENCL: 00

SUB CODE: AS   NO REF SOV: 000   OTHER: 000

Card 2/2

ACCESSION NR: AT4028747   S/2531/63/000/144/0088/0095

AUTHOR: Vorontsov, P. A.; Galadzhiy, N. M.; Konstantinov, A. R.

TITLE: Investigation of the distribution of certain structural characteristics of the vertical air flow

SOURCE: Leningrad. Gl. geofiz. observ. i Ukr. n.-i. gidrometeorol. inst. Trudy*, no. 144/40, 1963. Fizika pogranichnogo sloya atmosfery* (physics of the atmospheric boundary layer); Dneprovskaya expeditsiya GGO i UkrNIGMI, C8-95

TOPIC TAGS: Karman constant, wind velocity, turbulence, thermoanemograph

ABSTRACT: Distribution of pulsations of the horizontal and vertical components of wind velocity, the horizontal and vertical expansion of atmospheric turbulence, the Karman constant, and the values and the coefficient of turbulent exchange in the layer from 0.5 to 300 m is examined under various thermodynamic conditions. -The structure of the air flows from an altitude of 0.5 m to altitudes of 300 m were investigated in the joint expedition of GGO, UkrNIGMI and LGMI. In the lower layers 0.5 and 2.0 m altitude, the wind structure was investigated with the aid of a thermoanemograph, and in the upper layers, from 3 to 300 m, with an aid of a mechanical register of turbulent flow pulsations attached to a captive balloon. The dependences

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ACCESSION NR: AT4028747

of the horizontal expansion of vortexes and the dependence of the Karman constant on the altitude and temperature stratification of the atmosphere according to the thermoanemograph and the mechanical register are presented in a table. The dependence of the coefficient exchange on the altitude at various Richardson numbers and the temperature stratification of the atmosphere for various altitudes is presented in a graph; the authors draws the conclusion that if it is assumed that the value of the exchange coefficient in equilibrium stratification is unity, then the relative change in the intensity of the turbulent volume, dependent on the stratification of the atmosphere, is expressed more clearly at altitudes of 100, 200, and 300 m than at altitudes of 3.0 m. Consequently, with an increase of altitudes the effect of stratification increases. Orig. art. has: 4 figures, 3 tables and 4 formulas.

ASSOCIATION: Leningradskaya glavna geofizicheskaya observatoriya (Principle Geophysical Observatory of Leningrad)

SUBMITTED: 00   DATE ACQ: 16Apr64   ENCL: 00

SUB CODE: AS   NO REF SOV: 014   OTHER: 008

Card 2/2

ACCESSION NR: AT4028747   S/2531/63/000/144/0088/0095

AUTHOR: Vorontsov, P. A.; Galadzhiy, N. M.; Konstantinov, A. R.

TITLE: Investigation of the distribution of certain structural characteristics of the vertical air flow

SOURCE: Leningrad. Gl. geofiz. observ. i Ukr. n.-i. gidrometeorol. inst. Trudy*, no. 144/40, 1963. Fizika pogranichnogo sloya atmosfery* (physics of the atmospheric boundary layer); Dneprovskaya expeditsiya GGO i UkrNIGMI, 88-95

TOPIC TAGS: Karman constant, wind velocity, turbulence, thermoanemograph

ABSTRACT: Distribution of pulsations of the horizontal and vertical components of wind velocity, the horizontal and vertical expansion of atmospheric turbulence, the Karman constant, and the values and the coefficient of turbulent exchange in the layer from 0.5 to 300 m is examined under various thermodynamic conditions. -The structure of the air flows from an altitude of 0.5 m to altitudes of 300 m were investigated in the joint expedition of GGO, UkrNIGMI and LGMI. In the lower layers 0.5 and 2.0 m altitude, the wind structure was investigated with the aid of a thermo-anemograph, and in the upper layers, from 3 to 300 m, with an aid of a mechanical register of turbulent flow pulsations attached to a captive balloon. The dependences

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ACCESSION NR: AT4028747

of the horizontal expansion of vortexes and the dependence of the Karman constant on the altitude and temperature stratification of the atmosphere according to the thermoanemograph and the mechanical register are presented in a table. The dependence of the coefficient exchange on the altitude at various Richardson numbers and the temperature stratification of the atmosphere for various altitudes is presented in a graph; the authors draws the conclusion that if it is assumed that the value of the exchange coefficient in equilibrium stratification is unity, then the relative change in the intensity of the turbulent volume, dependent on the stratification of the atmosphere, is expressed more clearly at altitudes of 100, 200, and 300 m than at altitudes of 3.0 m. Consequently, with an increase of altitudes the effect of stratification increases. Orig. art. has: 4 figures, 3 tables and 4 formulas.

ASSOCIATION: Leningradskaya glavna geofizicheskaya observatoriya (Principle Geophysical Observatory of Leningrad)

SUBMITTED: 00   DATE ACQ: 16Apr64   ENCL: 00

SUB CODE: AS   NO REF SOV: 014   OTHER: 008

Card 2/2

VORONTSOV, P.A.; SELITSKAYA, V.I.

Use of helicopters in sounding the lower atmospheric layers. Trudy
GGO no.140:3-16 '63.

Methodology of atmospheric sounding by means of helicopters.
Ibid.:17-64   .   (MIRA 16:12)

ACC NR: AT6035515   SOURCE CODE: UR/2531/66/000/185/0072/0076

AUTHOR: Vorontsov, P. A.

ORG: none

TITLE: Evaluation of some of the components of turbulent energy balance

SOURCE: Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy, no. 185, 1966. Voprosy atmosfernoy diffuzii i zagryazneniya vozdukha (Problems of atmospheric diffusion and air pollution), 72-76

TOPIC TAGS: micrometeorology, atmospheric turbulence, turbulent energy balance, atmospheric surface boundary layer, wind velocity

ABSTRACT: Methods are presented by which some of the turbulent components of kinetic energy can be calculated (neglecting horizontal diffusion and advection). Data obtained by balloon soundings in the vicinity of the Shchekinsk State Regional Electric Power Station are used to demonstrate the method.
      The energy balance equation employed here is written

$$\frac{dE}{dt} = -\tau\frac{\partial u}{\partial z}(1-Ri) - \frac{\partial}{\partial z}(\overline{Ew}) - \varepsilon, \qquad (1)$$

Card 1/3   UDC: none

ACC NR: AT6035515

where $E = 1/2 (u'^2 + v'^2 + w'^2)$ is the kinetic energy of
turbulence (the kinetic energy of fluctuations) per unit
mass, $\tau \, \partial u/\partial z$ is the momentum of turbulence from the energy
of mean motion under the influence of frictional forces,
Ri is the Richardson number, $\partial/\partial z \, (Ew')$ is the gradient of
the vertical energy flux due to diffusion (transfer to other
levels), and $\bar{\varepsilon}$ is the rate of dissipation of the energy of
turbulence in heat.

Values of the longitudinal u' and vertical w' compo-
nents of the fluctuating component of the wind velocity
were measured in the spring and summer of 1962 and 1963.
These data were used to calculate the values of $\sqrt{u'^2}$ and
$\sqrt{w'^2}$ which denote the kinetic energy of the flux, and the
dimensionless quantities $\sqrt{u'^2}/\bar{u}$ and $\sqrt{w'^2}/\bar{u}$ denoting the
intensity of turbulence. Here, $u = \bar{u} + u'$, where u is
the constant component of u. The magnitude of $\sqrt{u'^2} = \sigma_u$
is determined by horizontal eddies whose dimensions are
independent of the distance above the underlying surface.
The vertical component of fluctuations in the wind velocity
σ_w was also calculated from these data.

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ACC NR: AT6035515

Values of the elements of the structure of air flow in the 3—300-m layer (u' = 0.1 m/sec) and (u' = 0.6 m/sec) were tabulated, as well as for H, $\bar{u}$, Y, σ_u, σ_w, σ_u^2, σ_w^2, $\sigma_u^2 \pm \sigma_w^2$, σ_u/u, σ_w/u, σ_w/σ_u, and Ri; in addition, values for Ew' and $\partial/\partial z$ Ew' at the 100-, 200-, and 300-m levels were calculated.

When the Ri is consistently 0.4—0.5, the absolute value of Ew' is maximum at either the surface of the ground or at the 100-m level, and decreases with height. With Ri fluctuating between -0.5 and 0.7, the maximum moves to a height of 200 m and the gradient $\partial Ew'/\partial z$ is especially large in the lower 100-m layer.

The author recommends extending the number of measured characteristics of the wind structure by recording the transverse component of the wind velocity and developing a method for calculating the rate of dissipation of the energy of turbulence. Orig. art. has; 4 tables and 1 formula.

[WA-50; CBE No. 14]

SUB CODE: 04/ SUBM DATE: none/ ORIG REF: 002/ OTH REF: 002[EO]

Card 3/3

L 14178-66   EWT(1)/FCC   GW

ACC NR: AT6004153

SOURCE CODE: UR/2531/65/000/167/0080/0097

AUTHOR: Vorontsov, P. A.

ORG: Main Geophysical Observatory, Leningrad (Glavnaya geofizicheskaya observatori-ya)

TITLE: Some characteristics of distribution of the coefficient of turbulence in a boundary layer

SOURCE: Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy, no. 1, 1965. Fizika pogranichnogo sloya atmosfery (Physics of the boundary layer of the atmos-phere), 80-97

TOPIC TAGS: turbulent boundary layer, atmospheric turbulence

ABSTRACT: The author considers various methods for calculating the coefficient of turbulence along the vertical in a boundary layer. Methods for calculating the co-efficient of turbulence at isolated levels in the boundary layer are analyzed. The coefficient of turbulence in ascending and descending flows is calculated for the case of fluctuations above various types of terrain. It is found that a character-istic feature of the coefficient of turbulence in the boundary layer is fluctuation

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L 14178-66

ACC NR: AT6004153

O

due to pulsations in the structure of the air flow under various atmospheric conditions. Consideration is given to the effect which terrain and the structure of the underlying surface have on the distribution of the coefficient of turbulence. It is found that deformation of the air flow by forests during the summer causes a maximum in the coefficient of turbulence at an altitude of about 100 m which reaches an altitude of 200 m as the air moves over the densest part of the forest. A rather thick layer with thermal instability is observed during the daylight hours in July over semi-desert areas, while a temperature inversion with attenuation of turbulence was observed above cotton fields, particularly during irrigation. Typical profiles for the coefficient of turbulence are given. Several examples are given to illustrate calculation of profiles for the coefficient of turbulence in a boundary layer. Orig. art. has: 7 figures, 11 tables, 7 formulas.

SUB CODE: 08/ SUBM DATE: 00/ ORIG REF: 009/ OTH REF: 000

Card 2/2

L 5021-66   EWT(1)/FCC   GW

ACC NR: AT5024880   SOURCE CODE: UR/2531/65/000/171/0003/0019

AUTHORS: Vorontsov, P. A.; German, M. A.

ORG: Main Geophysical Observatory, Leningrad (Glavnaya geofizicheskaya observatoriya)

TITLE: Studying atmospheric turbulence with the aid of a helicopter

SOURCE: Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy, no. 171, 1965. Rezul'taty issledovaniya atmosfernoy turbulentnosti na vertoletnykh trassakh (Results of the investigation of atmospheric turbulence on helicopter routes), 3-19

TOPIC TAGS: helicopter, flight characteristic , weather forecasting, atmosphere, wind, atmospheric turbulence,/ SP 11 overload register, MI 1 helicopter, MI 4 helicopter

ABSTRACT: The use of helicopter types MI-4 and MI-1 in studying atmospheric turbulence is described. The advantages of helicopters over fixed-wing craft in atmospheric research are briefly discussed. Loads acting on a helicopter are described in relation to the coordinate system shown in Fig. 1, where the origin

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ACC NR: AT5024880

Fig. 1. System of
coordinate axes
correlated with
the helicopter

of coordinates is at the center of gravity of the helicopter. In this system an
external force acting on the helicopter results in overloads in the coordinate

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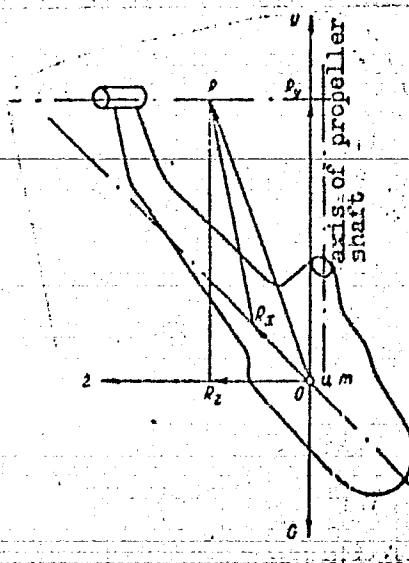
L 5021-66
ACC NR: AT5024880

directions which are given by

$$n_y = \frac{R_y}{G}, \quad n_x = \frac{R_x}{G}, \quad n_z = \frac{R_z}{G}.$$

The helicopter in an arbitrary flight attitude is sketched as a free body for the purpose of relating geometry and force variables. Expressions for resultant rotor aerodynamic forces, drag resistance forces, propulsion forces, and gravity are included. The given force and geometric quantities are then related to the dimensionless overload parameters. Two modes of helicopter flight are defined: suspended flight is flight in which the center of gravity of the craft is fixed with respect to the air mass medium and there is no rotation of the craft about the center of gravity; horizontal flight is termed stationary when translational acceleration is zero and nonstationary otherwise. The effects of atmospheric turbulence on both suspended and horizontal flight modes are developed, and the aerodynamic forces generated by the rotor blades are derived. The computation of vertical downdraft characteristics from flight control parameters and accelerograph data is demonstrated and tabulated for both airplanes and helicopters. Computation of turbulence coefficient follows the algorithm of M. A. German (O turbulentnom obmene v oblakakh. Meteorologiya i gidrologiya, No. 10, 1953). The

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L 5021-66
ACC NR: AT5024880

results of experiments performed in August 1962 for the purpose of obtaining
characteristics of air currents along the Simferopol'-Yalta route are tabulated
and discussed. An MI-4 helicopter and an SP-11 overload register were used in the
tests. Orig. art. has: 16 tables, 4 figures, and 25 equations.

SUB CODE: ES, AC /   SUBM DATE: 00/   ORIG REF: 006/   OTH REF: 000

Card 4/4

VORONTSOV, P.A.; GERMAN, M.A.

Study of atmospheric turbulence by means of a helicopter.
(MIRA 18:9)
Trudy GGO no.171:3-19 '65.

1. Glavnaya geofizicheskaya observatoriya im. A.I. Voyeykova,
Leningrad.

L 1773-66   EWT(d)/EWT(1)/EWT(m)/EWP(w)/FA/FCC/T-2/EWP(h)   EM/GW

ACCESSION NR: AT5024881   UR/2531/65/000/171/0020/0031

AUTHOR: Vorontsov, P. A.

TITLE: Program and method of investigating atmospheric turbulence along helicopter routes in the mountains

SOURCE: Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy, no. 171, 1965. Rezul'taty issledovaniya atmosfernoy turbulentnosti na vertoletnykh trassakh (Results of the investigation of atmospheric turbulence on helicopter routes), 20-31

TOPIC TAGS: aviation meteorology, helicopter bumping, flight chart, atmospheric turbulence

ABSTRACT: The author presents the results of an investigation of atmospheric turbulence in the Caucasus and the Crimea conducted to provide background data for a new set of instructions for meteorologists preparing forecasts for helicopter flights in mountainous regions. The study was conducted with the cooperation of the Main Geophysical Observatory, the State Scientific Research Institute of the Civil Air Fleet, the Central Institute of Weather Forecasting, the Central Aerological Observatory, the Moscow State University, the Ukrainian Scientific Research Hydrometeorological Institute, the Transcaucasus Scientific Research Hydrometeorological Institute,

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L 1773-66
ACCESSION NR: AT5024881

and the Aviation Meteorological Station of the Civil Air Fleet at Simferopol. Meas-
urements were made of temperature, pressure, humidity, wind direction and velocity,
and cloudiness using specially equipped MI-1 and MI-4 helicopters, LI-2 airplanes,
and ordinary helicopters flying on regular routes (Kutaisi-Shovi and Adler-Novorossiysk).
The equipment, instruments, and procedures used and the results obtained are dis-
cussed in detail. Findings obtained in earlier studies are also cited. Samples of
charts (perspective sketches with relief shown by hachures) used by pilots in designing
turbulent zones encountered en route are presented. Recommendations are made for
specifications to be incorporated in the new flight instructions. Orig. art. has:
4 figures.   [SP]

ASSOCIATION: Glavnaya geofizicheskaya observatoriya, Leningrad (Main Geophysical
Observatory)

SUBMITTED: 00	ENCL: 00	SUB CODE: ES,AC
NO REF SOV: 002	OTHER: 001	ATD PRESS: 4/11

Card 2/2

VORONTSOV, P.A.; VASIL'YEV, A.A.

Problems of meteorological flight security on helicopter routes in mountainous regions. Trudy GGO no.171:122-129 '65.

(MIRA 18:9)

1. Glavnaya geofizicheskaya observatoriya im. A.I. Voyeykova, Leningrad (for Vorontsov). 2. TSentral'nyy institut prognozov (for Vasil'yev).

two k maxima at heights of 100 and 300 m and a small max... ...
... illustrated in Fig. 1 of the Enclosure and are analyzed thoroughly in the text. In ...

VORONTSOV, P. B.

FDD

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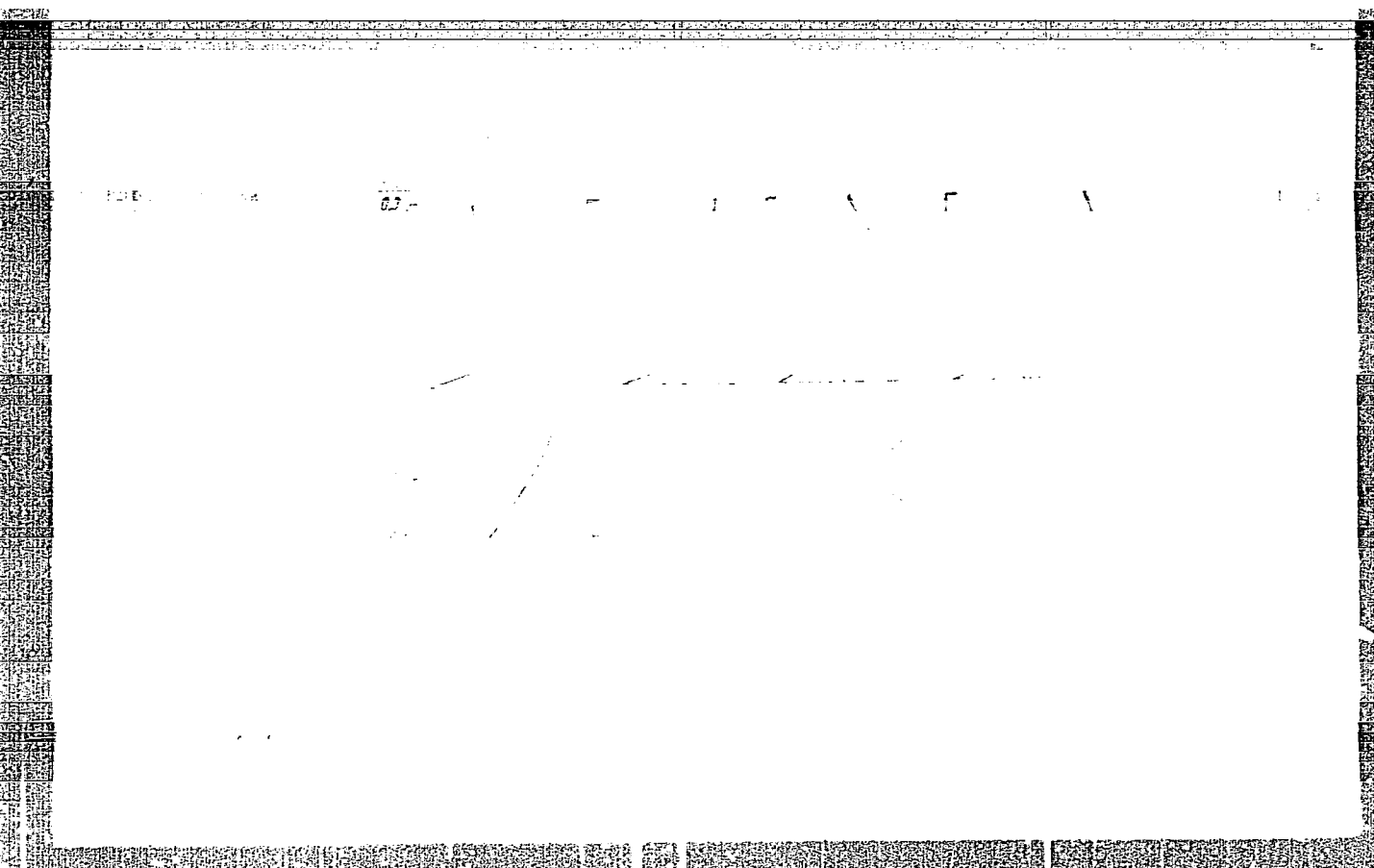
USSR/Engineering
Metallurgical Equipment
Industrie: Efficiency

Dec 48

"Operation of Foundry Driers With Low-Grade Fuel," P. B. Vorontsov, Apr 4 pp

"Za Ekon Top" No 12

Discusses operation of foundry driers with low-grade fuel. Refers to experiences which show that burning brown coal in foundry driers is quite possible and can be achieved without any difficulties. The satisfactory use of brown coal in driers can be explained, in most cases, as being due to faulty maintenance and condition of

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the driers, but not to the property of brown coal. Operational economy of driers is not decreased. Gives graphs and tables for foundry driers.

FDD

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Continuous drying of lithopone. P. H. Voronkov. (Org. Chem. Ind. (U. S. S. R.) 7, 215-17(1940). — Details of construction of loop-type drier. Time required for drying 2.5 hrs., capacity of dry material output 11,500 kg./ shift, moisture reduction from 80 to 1.8%, moisture removal per unit area of drier 62.3 kg./sq. m./hr. and steam consumption 2200 kg./hr. at about 4 atm.   B. Z. K.

METALLURGICAL LITERATURE CLASSIFICATION